

CLAIMS

What is claimed is:

1. In an internal combustion engine coupled to an exhaust system having a catalyst, a method of adjusting an oxidant storage capacity of the catalyst, comprising:
  - estimating a current amount of oxidants stored in the catalyst;
  - estimating an amount of oxidant storage available in the catalyst;

10 comparing said estimated amount of oxidants stored in the catalyst to said estimated amount of oxidant storage available;

adjusting an engine operating parameter in response to said comparison to affect a temperature of the catalyst.

2. The method of claim 1, wherein said engine operating parameter is indicative of engine spark.

- 20 3. The method of claim 2, wherein said parameter indicative of engine spark is adjusted based on a temperature of an exhaust flange.

- 25 4. The method of claim 2, further comprising the step of adjusting engine air mass in response to said adjusted parameter indicative of engine spark.

5. The method of claim 4, wherein said engine air mass is adjusted based on a parameter indicative of a minimum spark required for best torque.

5 6. In an internal combustion engine coupled to an exhaust system having a catalyst, a method of adjusting an engine air/fuel ratio, comprising:

estimating an actual amount of oxidants stored in the catalyst;

10 comparing said actual oxidant amount to a target amount of stored oxidants;

adjusting an amount of fuel provided to the engine based on said comparison; and

15 adjusting an oxidant storage capacity of the catalyst based on said estimate of the actual amount of oxidants stored in the catalyst.

7. The method of claim 6, wherein said step of adjusting an oxidant storage capacity of the catalyst further comprises the step of estimating an available 20 oxidant storage capacity; and comparing said estimate of the actual amount of oxidants stored in the catalyst to said estimated available oxidant storage capacity.

8. The method of claim 7, further comprising the  
step of adjusting an engine operating parameter in  
response to said comparison of said estimate of the  
actual amount of oxidants stored in the catalyst to said  
5 estimated available oxidant storage capacity to affect a  
temperature of the catalyst.

9. The method of claim 8, wherein said engine  
operating parameter is indicative of engine spark.

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10. The method of claim 9, wherein said parameter  
indicative of engine spark is adjusted based on a  
temperature of an exhaust flange.

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11. The method of claim 9, further comprising the  
step of adjusting engine air mass in response to said  
adjusted parameter indicative of engine spark.

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12. The method of claim 11, wherein said engine air  
mass is adjusted based on a parameter indicative of a  
minimum spark required for best torque.

13. A system for adjusting an air/fuel ratio in the cylinders of an internal combustion engine coupled to an exhaust system, comprising:

a catalyst positioned in the exhaust stream; and  
5 a controller for estimating an actual amount of oxidants stored in said catalyst, comparing said actual oxidant amount to a target amount of oxidants stored in the catalyst, adjusting an amount of fuel provided to the cylinders based on said comparision, and adjusting an  
10 oxidant storage capacity of the catalyst based on said estimate of the actual amount of oxidants stored in the catalyst.

14. The system of claim 13, wherein said controller  
15 adjusts a parameter indicative of engine spark in response to a comparison between said estimate of the actual amount of oxidants stored in the catalyst and an estimate of an available oxidant storage capacity.

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